

PATENT  
514453-3916

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Hornung et al

U.S. Serial No. : 10/070,242

Filed: : February 27, 2002  
(U.S. International Phase of PCT/EP00/08518  
Filed August 31, 2000)

For : **FIVE MEMBERED-RING COMPOUNDS AND  
UTILIZATION THEREOF IN LIQUID CRYSTAL  
MIXTURES**

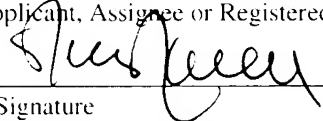
Confirmation No. : 2927

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I hereby certify that this correspondence is being  
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Commissioner for Patents, Box PCT, Washington,  
D.C. 20231, on **October 15, 2002**

William F. Lawrence, Reg. 28,029

Name of Applicant, Assignee or Registered Representative

  
Signature  
October 15, 2002

Date of Signature

**INFORMATION DISCLOSURE STATEMENT**

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

Enclosed are copies of publications the subject matters of which are mentioned in the  
attached International Search Report for the Examiner's review:

1. Offenlegungsschrift DE 44 46 836 A1 published by the German Patent Office on June 29, 1995;
2. J. W. Brown et al., "Some Three-Ring Esters Containing a Five-Membered Heteroaromatic Ring. A Comparison of Liquid Crystal Properties", Molecular Crystals and Liquid Crystals, 1989, Vol. 173 pp. 121-140, New York, U.S.;
3. M. Osman, et al. "Stable Liquid Crystals with Large Negative Dielectric Anisotropy - III", Molecular Crystals and Liquid Crystals, (Letters), 1983, Vol. 82, pp. 339-344;
4. European Patent Application 89119172.8, published in English as 0 364 923 A2 by the European Patent Office on April 25, 1990;
5. European Patent Application 92102754.6, published in English as 0 500 072 A1 by the European Patent Office on August 26, 1992;
6. U.K. Patent Application 8905841.6 published as GB 2 229 179 A on September 19, 1990;
7. D.F. Andres, "Reaction of Thioglycolate with  $\alpha$ -Fluoro- $\beta$ -(Phenylthio)enones (or-enals): Synthesis of Substituted  $\alpha$ -Carboxy- $\gamma$ -Fluorothiophenes", 1997, Tetrahedron Letters, Vol. 38, No. 6, pp. 1049-1052.
8. C. Corral et al., "The Behavior of Vicinal Alkyl Aminothiophene-carboxylates in the Sandmeyer and Schiemann Reactions", 1985, Heterocycles, Vol. 23, No. 6, pp. 1431-1435;

9. Offenlegungsschrift DE 197 40 891 A1 published by the German Patent Office on March 26, 1998;
10. Japanese Patent No. 63-060981 A granted to Kawasaki Kasei Kogyo KK on March 17, 1988 (also cited in the application) with English language abstract;
11. S. Takenaka et al., The S<sub>A</sub>-S<sub>A</sub> Transition in a Homologous Series of 4(4-Alkoxyphenoxy carbonyl)phenyl 5-Nitro-2-furancarboxylates, 1985, Molecular Crystals and Liquid Crystals, Vol. 131, No. 3/4, New York, USA;

The following additional documents were cited in the application (pages 1 and 2) as follows:

12. European Patent Application 80550005.2 published as 0 032 362 A1 on July 22, 1981;
13. European Patent Application 97118671.3 published as 0 916 714 A1 on May 19, 1999;
14. Offenlegungsschrift DE 197 48 432 A1 published by the German Patent Office on May 6, 1999 with English language abstract;
15. European Patent Application 92102754 published as 0 500 072 A1 on August 26, 1992;
16. Japanese Patent Appln. No. 10-333113 of Sharp Corp. Kanto Chem. Co. Inc. published December 18, 1998, with English language abstract;
17. European Patent Specification 0 439 170 B1 of Canon Kabushiki Kaisha published on January 24, 1991;

18. U.S. Patent No. 4,873,019 granted to Krause et al. on October 10, 1989.


We have enclosed a copy of PTO-1449, in duplicate, which is considered part of the Information Disclosure Statement.

This Information Disclosure Statement is being submitted prior to receipt of a first Office Action, so no fee is deemed necessary. However, if a fee is required, the Examiner is hereby authorized to charge our Deposit Account 50-0320.

Applicant respectfully requests that the Examiner consider and make of record the documents cited herein and that a copy of Form PTO-1449 be initialed by the Examiner and returned to the undersigned.

Respectfully submitted,

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Based on Form PTO-1449 (3/90)  LIST OF REFERENCES CITED BY APPLICANT (Use several sheets if necessary)	ATTY. DOCKET NO.	SERIAL NO.
	514453-3916	10/070,242
	APPLICANT	
	Hornung, et al.	
	FILING DATE	GROUP
	February 27, 2002	2927

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	4,873,019	10/10/89	Krause et al.	252	299.61	

## FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AB	DE 44 46 836 A1	6/29/95	Germany				X
	AC	0 364 923 A2	4/25/90	EPO				
	AD	0 500 072 A1	8/26/92	EPO				
	AE	2 229 179 A	9/19/90	United Kingdom				
	AF	DE 197 40 898 A1	3/26/98	Germany				X
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	AH	0 032 362 A1	7/22/81	EPO				
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	AJ	DE 197 48 432 A1	5/6/99	Germany			Abst.	
	AK	0 500 072 A1	8/26/92	EPO				
	AL	10-333113	12/18/98	Japan			Abst.	
	AM	0 439 170 B1	7/31/91	EPO				

## OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	AN	J. W. Brown et al., "Some Three-Ring Esters Containing a Five-Membered Heteroaromatic Ring. A Comparison of Liquid Crystal Properties", Molecular Crystals and Liquid Crystals, 1989, Vol. 173 pp. 121-140
	AO	M. Osman, et al. "Stable Liquid Crystals with Large Negative Dielectric Anisotropy - III", Molecular Crystals and Liquid Crystals, (Letters), 1983, Vol. 82, pp. 339-344
	AP	D.F. Andres, "Reaction of Thioglycolate with $\alpha$ -Fluoro- $\beta$ -(Phenylthio)enones (or-enals): Synthesis of Substituted $\alpha$ -Carboxy- $\gamma$ -Fluorothiophenes", 1997, Tetrahedron Letters, Vol. 38, No. 6, pp. 1049-1052
	AQ	C. Corral et al., "The Behavior of Vicinal Alkyl Aminothiophene-carboxylates in the Sandmeyer and Schiemann Reactions", 1985, Heterocycles, Vol. 23, No. 6, pp. 1431-1435
	AR	S. Takenaka et al., The S <sub>A</sub> -S <sub>A</sub> Transition in a Homologous Series of 4(4-Alkoxyphenoxy carbonyl)phenyl 5-Nitro-2-furancarboxylates, 1985, Molecular Crystals and Liquid Crystals, Vol. 131, No. 3/4

EXAMINER	DATE CONSIDERED
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\* EXAMINER Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.